



**Math 130 – 4943**  
**Finite Mathematics**  
**TR 1:30 – 2:55 (Sierra 223)**

**Instructor:** Jim Michelena

**Office:** Sierra Hall 231

**Course web page:** <http://www.mymathlab.com>

**Office Hours:** M–Th 9:40 am – 10:10 am; T and Th 11:30 am – 12:30 pm; other hours can be scheduled

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### **Course Description**

Math 130 is a course that will present many concepts that deal with business, behavioral sciences, and social sciences. We will cover the following topics: set theory, probability and counting techniques, Markov chains, matrices and linear systems, linear programming (Simplex Method), applications to business, behavioral sciences, and social sciences.

### **Textbook and other materials**

- [Finite Mathematics & Its Applications](#) by Larry Goldstein, David Schneider, and Martha Siegel; 11<sup>th</sup> edition, Pearson
- [MyMathLab student access code](#)

### **Prerequisite**

A grade of a “C” or better in Math 89 or Math 90; or placement through the MJC assessment process.

### **Grades**

The point spread will be as follows:

Homework - 15%, Quizzes - 15%, Exams - 45%, Final Exam - 25%

### **Course Grade**

If you receive greater than or equal to 89.5%, you will receive an A. If you receive greater than or equal to 79.5% you will receive at least a B. If you receive greater than or equal to 69.5%, you will receive at least a C. If you receive greater than or equal to 59.5%, you will receive at least a D. Otherwise you may receive an F.

### **Homework**

Homework will be assigned daily online and will have a due date. Late homework **WILL NOT** be accepted. It is your responsibility to understand the homework that is assigned online. If you do not do the homework, you may not be very successful in this class. Homework is an **essential** component of your learning in this course.

### **Quizzes**

We will have many online quizzes throughout the term. Each quiz will be assigned online intermittently throughout the term to test your skills on the concepts we are covering in the lectures and homework. **NO** make-ups will be given.

### **Exams**

There will be three exams given in class during the term. These exams will be completed in class and will contain the materials covered in the lectures, homework, quizzes, and in the book. If you cannot attend the class on the day of an exam it is **your responsibility** to notify me in advance. Otherwise, there will be no make-up exams.

## Final Exam

If you do not take the final exam, you will not receive a passing grade. The final exam will be a cumulative exam, which is scheduled for Tuesday, April 25<sup>th</sup> from 1:00 pm to 3:50 pm.

## Extra Notes

1. If a student cheats on an assignment, he/she will be given a zero on it and notification will be sent to the Dean of SME and the Director of Student Success.
2. The quizzes and exams will be completed without books, notes, cell phones, and other people unless I tell the whole class that they can use any of these materials.
3. If a cell phone goes off during class, the student will need to talk to me after class. So turn them off or put them in silent mode when you enter the classroom.
4. I will be taking roll every day. If you miss more than three class sessions, you will be strongly recommended not to return to class. It is your responsibility to drop the class.
5. If you miss class during the first two weeks or do not log onto the MyMathLab software during the first week, you may be dropped from the class.
6. If you have a disability or any problems taking notes or tests, notify me right away.

## Course Learning Outcomes:

Students successfully completing MATH 130 should be prepared to:

1. Analyze and solve level appropriate problems including set theory, probability and counting techniques, matrices and linear systems, and applications.
2. Effectively communicate, using appropriate mathematical notation, processes and strategies in solving level appropriate problems including set theory, probability and counting techniques, matrices and linear systems, and applications.

## Required Learning Goals (SLOs)

Upon satisfactory completion of this course, the student will be able to:

- Perform matrix operations including addition, subtraction, scalar multiplication, transpose, and matrix multiplication.
- Find the multiplicative inverse of a square matrix by using Gaussian Elimination.
- Solve a system of linear equations by using the inverse of the coefficient matrix.
- Write a linear programming problem in algebraic form (define the variables, write the constraints and objective function).
- Solve a linear programming problem by graphing (graph, determine the vertex locations, and determine the maximum and minimum values of an objective function).
- Solve a maximum linear programming problem by using the Simplex Method.
- Convert minimum or mixed constraint linear programming problems to standard maximum form and solve by the Simplex Method.
- Write the dual of a linear programming problem and solve the dual by the Simplex Method.
- Solve the primal system by using the dual.
- Use sensitivity analysis to analyze the benefits of changing available resources.
- Perform set operations including union, intersection, and complement.
- Graph sets and set operations on Venn Diagrams.
- Apply the Fundamental Counting Principle, permutations, and combinations to various combinatorics problems.
- Use the Binomial Theorem in counting problems (optional).
- Calculate the probabilities of events using various combinatorics methods.

- Find the probabilities of events using unions, intersections, complements, and conditional probabilities.
- Determine if events are independent.
- Represent events and their associated probabilities using tree diagrams.
- Apply Baye's Theorem to solving probability problems.
- Calculate probabilities using binominal trials.
- Find the expected value of a probability distribution.
- Write the distribution matrix and the transition matrix for a Markov Process problem.
- Calculate stable distribution matrix (optional).
- Use linear regression to determine the best fit line to data points (optional).
- Solve applications problems specific to each method in each of the topics above.
- Perform matrix arithmetic operations, including inverse of a  $3 \times 3$  matrix.
- Solve a linear programming problem using the graphing/geometric method.
- Solve financial problems involving compound interest, amortization, and related concepts.
- Write a system of linear equations to solve applied problems
- Solve a system of linear equation using Gauss-Jordan elimination and interpret the results.
- Solve applied problems in finance including future and present value, annuities and sinking funds.

## **Important Dates**

Start Date: 01/09/2017

Refund Date: 01/22/2017

Drop without 'W' Date: 01/22/2017

Pass No Pass Date: 02/07/2017

Last Day to Drop Date: 04/03/2017

End Date: 04/29/2017

Disclaimer: The instructor reserves the right to make any adjustments necessary in the operations of this course that in his judgment are warranted to better meet the students.

## Schedule

Monday	Tuesday	Wednesday	Thursday
1/9	1/10 Introduction, 1.1	1/11	1/12 1.2, 1.3
1/16 <b>NO SCHOOL</b>	1/17 1.4, 2.1	1/18	1/19 2.1, 2.2
1/23	1/24 2.2, 2.3	1/25	1/26 2.3, 2.4
1/30	1/31 2.4, 2.5	2/1	2/2 Review
2/6	2/7 Exam#1	2/8	2/9 3.1, 3.2
2/13	2/14 3.3	2/15	2/16 4.1
2/20 <b>NO SCHOOL</b>	2/21 4.2	2/22	2/23 4.3
2/27	2/28 4.4, 4.5	3/1	3/2 Review
3/6	3/7 Exam#2	3/8	3/9 5.1, 5.2
3/13	3/14 5.3, 5.4	3/15	3/16 5.5, 5.6
3/20	3/21 6.1, 6.2	3/22	3/23 6.3, 6.4
3/27	3/28 6.5, 6.6	3/29	3/30 7.3, 7.4, 8.1
4/3	4/4 8.1, 8.2	4/5	4/6 8.2, 8.3
4/10	4/11 Review	4/12	4/13 Exam #3
4/17	4/18 10.1, 10.2	4/19	4/20 Review